National Institute of Environmental Health Sciences

Climate change and highland malaria: Fresh air for a hot debate

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Abstract:

In recent decades, malaria has become established in zones at the margin of its previous distribution, especially in the highlands of East Africa. Studies in this region have sparked a heated debate over the importance of climate change in the territorial expansion of malaria, where positions range from its neglect to the reification of correlations as causes. Here, we review studies supporting and rebutting the role of climatic change as a driving force for highland invasion by malaria. We assessed the conclusions from both sides of the argument and found that evidence for the role of climate in these dynamics is robust. However, we also argue that over-emphasizing the importance of climate is misleading for setting a research agenda, even one which attempts to understand climate change impacts on emerging malaria patterns. We review alternative drivers for the emergence of this disease and highlight the problems still calling for research if the multidimensional nature of malaria is to be adequately tackled. We also contextualize highland malaria as an ongoing evolutionary process. Finally, we present Schmalhausen's law, which explains the lack of resilience in stressed systems, as a biological principle that unifies the importance of climatic and other environmental factors in driving malaria patterns across different spatio-temporal scales.

Source: Ask your librarian to help locate this item.

Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Human Conflict/Displacement, Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : highlands

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Africa

African Region/Country: African Region

Other African Region: eastern africa

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content